UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/768,361	01/25/2001	Hiroki Kitagawa	1359-1035	3649

21171	7590	05/13/2004	

STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER
STREGE, JOHN B

ART UNIT	PAPER NUMBER
2625	

DATE MAILED: 05/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/768,361	KITAGAWA ET AL.
	Examiner	Art Unit
	John B Strege	2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 April 2004*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

    4a) Of the above claim(s) *5-10* is/are withdrawn from consideration.

5)☒ Claim(s) *11-15,20 and 21* is/are allowed.

6)☒ Claim(s) *1-4 and 17-19* is/are rejected.

7)☒ Claim(s) *16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 January 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☒ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date *2*.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1.   Applicant's election of Embodiment II (Species II, claims 1-4, 11-21) in Paper No.

4 is acknowledged. Because applicant did not distinctly and specifically point out the

supposed errors in the restriction requirement, the election has been treated as an

election without traverse (MPEP § 818.03(a)).

2.   The Examiner acknowledges the applicants' request for correction to the Office

Action (paper no. 4) mailed 3/14/04. Examiner agrees that Species 1 corresponds to

figures 1-7. The Applicants' request to add Embodiment III that includes figure 12 is

acknowledged, however the Examiner disagrees that this is a separate embodiment.

After acknowledging applicants' election of embodiment II (including claims 18-21),

which recite a computer-readable recording, correction is now made to species II being

directed to figures 3, and 8-12. Hence there is no need for a species III.

3.   Claims 5-10 are withdrawn from further consideration pursuant to 37 CFR

1.142(b) as being drawn to a nonelected species, there being no allowable generic or

linking claim. Election was made **without** traverse in Paper No. 5.

Claim Objections

4.   Claim 16 objected to because of the following informalities: line 19 of claim 16 is

not the final limitation of the claim but it ends in a period. Appropriate correction is

required. Claim 16 would be allowable after this correction is made.

Specification

5.   The title of the invention is not descriptive. A new title is required that is clearly

indicative of the invention to which the claims are directed. Examiner suggests: "Picture

matching processing system by selecting windows with minimal variation".

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7.   Claims 1-4 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Adini et al. IEEE transactions on pattern analysis and machine intelligence article

Face Recognition: The Problem of Compensating for Changes in Illumination Direction

(hereinafter "Adini").

Claim 1 discloses, "a picture matching processing system, comprising: a window

picture cutting part for cutting out characteristic window pictures from a previously

captured recognition target picture; a capturing environment variation influence

evaluating part for evaluating the influence of variations in a capturing environment of

the cut out window pictures; and a window picture selecting part for selecting a window

picture in which the influence of variations in a capturing environment is at a

predetermined level or less among the cut out window pictures, based on results of the

evaluation of the influence of variations in a capturing environment, wherein picture

matching is conducted by using the selected window picture."

Adini discloses a method taking an image of a face and considering separately

several regions of the face because some evidence suggests that different face parts

make dissimilar contributions to face recognition (as seen in figure 4, disclosed in

paragraph above fig. 4, page 724)(corresponding to the claimed window picture cutting

part). Adini further recites that determining the reliability of the distance between

different images of the same individual under different conditions could serve a useful

role in compensating for image variations caused by changes in the viewing condition

(paragraph beginning under figure 4, page 724). A relative score was used to evaluate

the sensitivity of a given representation to the variations between images of the same

face relative to the variations between images of different faces (first full paragraph,

second column, page 724)(capturing environment variation influence evaluating part).

A face is defined as missed face if the distance between two images of this face taken

under different conditions (e.g. different illumination) was larger than the distance

between the image of the face and one of the images of another face (second full

paragraph, second column, page 724) (influence of variations in a capturing

environment is at a predetermined level or less).

Within the disclosure of the method Adini does not explicitly disclose selecting a

window picture based on the evaluation carried out as described above, however one of

ordinary skill in the art would realize that it would be obvious to do so based on the

disclosure in the background of Adini.

At the time of the invention it would have been obvious to one of ordinary skill in the art to use the method as disclosed by Adini in order to choose a section of the face that would be the most reliable for recognition purposes. The motivation for doing so is that Adini discloses that a face recognition system must recognize a face from a novel image despite the variations between images of the same face, and that a common approach to overcoming image variations due to changes in the illumination conditions is to select image representations that are relatively insensitive to variation (as stated in the abstract page 721). Adini further suggests that class-based processing is extracting special facial features in a manner that is independent of the illumination direction. This can be performed by choosing, for example, only edges that are expected to be stable in a face image from the edge map of a face (section 4.2.3 page 728). He gives a method of finding the reliability of the image based on the distance threshold as discussed above. Therefore it would have been obvious to one of ordinary skill in the art to use the method and teaching of Adini to obtain the invention as disclosed in claim 1.

Regarding claim 2, as discussed Adini considers cutting several regions of the face image and using them for recognition purposes (figure 4),

Regarding claim 3, the capturing environment disclosd by Adini includes relative positon and direction between an individual to be recognized and a camera (first paragraph of section 2, page 723, also figure 3).

Regarding claim 4, it would be obvious to display a selected part and carry out correction of the part.

Claim 17 discloses similar limitations to claim 1 except that claim 17 relates to a

computer-readable recording medium. The images as disclosed by Adini are stored in a

database and the processing is obviously carried out by a processing program, thus the

same arguments used for claim 1 apply equally to claim 17.

8.   Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Adini in view of Fukui et al. USPN 6,466,685 (hereinafter "Fukui").

As seen in figure 3 Adini discloses capturing images of a face from different

poses and illuminations which can be read as a picture group with different capturing

environments. Adini further discloses selecting different regions of the face and cutting

out windows for those regions as seen in figure 4 (corresponding to window picture

cutting). Adini further stats that a common approach to overcoming image variations

because of changes in the illumination conditions is to use image representations that

are relatively insensitive to these variations (as stated in the abstract). Adini does not

explicitly disclose a feature value calculation processing, or a stable window picture

selecting processing.

Fukui discloses a person identification apparatus with a face area extraction

section 12 (figure 1) that continuously moves a template over an image to define the

face area of a recognition target (col. 3 lines 54-63). A feature point extraction section

13 (figure 1) extract candidates of the feature points including an eye or nose hole from

the face area (col. 3 lines 64-67)(also corresponding window picture cutting). The

feature point selection calculates the value of the structure parameters of each feature

(col. 4 lines 14-15)(corresponding to calculating a feature value). The feature extraction section further process pixels whose intensity values are lower than a threshold and uses this to select a candidate feature point (selecting a window picture in which variations in a feature value are small).

Adini and Fukui are analogous art because they are from the same field of endeavor of face recognition.

At the time of the invention it would have been obvious to one of ordinary skill in the art to set a window picture in which variations in a feature value caused by the difference in a capturing environment are small. The motivation for doing so would be to overcome the problems that arise due to differences in illumination as disclosed by Adini. Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Adini and Fukui to obtain the invention as disclosed in claims 18-19.

Allowable Subject Matter

9.   Claims 11-15, and 20-21 are allowed.

10.   The following is a statement of reasons for the indication of allowable subject matter: Regarding claim 11, none of the prior art disclose, selecting as a stable window picture, only a window picture set in which a variation width of the feature value is within a predetermined threshold value. The closest prior art comes from Adini as discussed above. Adini et al. *Face Recognition: The Problem of Compensating for Changes in Illumination Direction* nor Fukui et al. USPN 5,982,912 disclose selecting only a window

picture in which a variation width is within a predetermined threshold value. Claims 12-15 are dependent on claim 11 and therefore allowable for the same reasons. Claim 20 also discloses this limitation and is thus allowable for the same reason.

Regarding claim 21, none of the prior art disclose a projection processing step wherein selecting a window picture used for projection, selects a window picture cut out from a first, last, and an intermediate picture of the continuous picture group, in accordance with a projection point tracking precision. Adini the closest related prior art discloses the picture group input processing, window picture cutting process, and gives motivation for selecting a window picture. Fukui et al USPN 6,466,685 discloses a feature value calculating process, and a projecting process onto an eigen space. However Adini and Fukui fail to disclose that the windows are selected from multiple pictures in accordance with a projection point tracking precision.
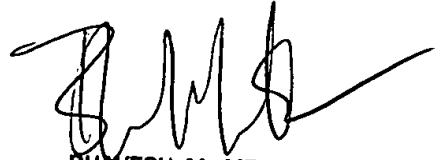
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B Strege whose telephone number is (703) 305-8679. The examiner can normally be reached on Monday-Friday 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (703) 308-5246. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

JS

BHAVESH M. MEHTA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600